

Mountainville, New York, 11th.
 Wauseon, Ohio, 14th, 26th.
 Portland, Oregon, 5th.
 Nashville, Tennessee, 21st, 22d, 24th, 25th.
 Rio Grande City, Texas, 23d.
 El Paso, Texas, 26th.
 Wytheville, Virginia, 25th, 29th.
 Dale Enterprise, Virginia, 25th, 27th.
 Prairie du Chien, Wisconsin, 9th.
 Fort Bridger, Wyoming, 23d, 26th.

WATER SPOUTS.

The following note is from the "Galveston (Texas) News," of November 30th, 1884:

On Thursday evening just before the "norther" struck the city, a fearful water spout made its appearance in the channel just in front of the quarantine station. The water ascended in the shape of a cone, with the apex downward, to a height of one hundred yards, and at the top, had the appearance of being from sixty to seventy yards in diameter. In descending the water struck the wharf and the cones of the quarantine station with great force, but caused no damage.

SAND STORM.

Fort McDowell, Arizona, 8th.

NOTES AND EXTRACTS.

The following is the November bulletin of the Alabama Weather Service, Prof. P. H. Mell, jr., Director:

The precipitation for the three months of autumn was nearly eight inches below the average for the state.

The temperature for the same time was about normal. The high averages of September and October were neutralized by the low average of November.

The first four days of November were mild and pleasant; on the 5th the Chief Signal Officer predicted frost, the temperature fell twenty or twenty-five degrees and a heavy frost is reported from all sections; several days of cool weather followed, but from the 10th to the 18th there was a week of beautiful hazy Indian summer; the temperature then decreased, and the cold wave predicted by the Chief Signal Officer reached the state on the 24th and 25th; the last four days were warmer but frost is reported from many stations. The temperature for the state was about three degrees below the normal.

The precipitation for the month was two inches below the average. There were sixteen days without rain; a few showers occurred on the 4th, and from the 18th to the 30th the weather was frequently showery.

State summary.

Mean temperature, 51°.5; highest temperature, 82° at Newton on the 4th; lowest temperature, 15° at Calera on the 7th; range of temperature, 67°; greatest monthly range of temperature, 55° at Bolling and 62° at Calera; least monthly range of temperature, 37° at Wetumpka; greatest daily range of temperature, 45° at Bolling on the 12th, 54° at Calera on the 9th; least daily range of temperature, 0° at Mountain View on the 19th, and 8° at Birmingham on the 18th.

Mean depth of rainfall, 2.44 inches; mean daily rainfall, 0.081 of an inch; greatest depth of monthly rainfall, 4.65 inches at Bolling; least depth of monthly rainfall, 0.25 at Mountain View; greatest daily average rainfall for the state, 0.65 of an inch, on the 28th; greatest daily rainfall, 2.75 inches at Summerville on the 28th.

Days of general rainfall, 18th, 22d, 23d, 25th, 27th, 28th; average number of days on which rain fell, 6; average number of cloudy days, 9; average number of fair days, 9; average number of clear days, 12; warmest days, 3d and 4th; coldest days, 24th and 25th.

Prevailing direction of the wind, northwest.

Prof. W. H. Ragan, of Greencastle, Indiana, furnishes the following meteorological summary for the state:

Districts.	Temperature.			Precipitation for November, 1884.
	Highest.	Lowest.	Monthly mean.	
Northern counties.....	70	0	38.4	3.40
Central counties.....	68	8	39.2	3.10
Southern counties.....	78	10	42.8	0.70
State.....	78	8	40.1	3.03

The following is the November bulletin of the Iowa Weather Service, Gustavus Hinrichs, Director:

November, 1884, was nearly normal in temperature, fair and dry, westerly winds and calms prevailing.

The mean temperature of the air was 0°.5 above normal. The first two decades were warm, averaging 2°.5 above normal; fine clear and warm, hazy Indian summer days were numerous, and hardly any rain fell. The last decade was cold, being over 3° below the normal; during the evening of the 22d the first blizzard of the winter set in, lowering the temperature of the air 36° turning the rain-storm into a snow-storm, and making the next day, the 23d, the first real winter day of the season.

During the first two decades of the month, the prevailing bright sunshine averaged 103° on the sun thermometer, 46° in excess of the temperature of the air at noon. During the cold cloudy third decade, the sun thermometer averaged only 80°, or 34° above the air temperature at noon.

Dense and extended fogs occurred on the 11th and 12th. The principal and almost the only precipitation throughout the state took place on the 22d, as rain turning into snow as the high wind from the northwest cooled the air.

The fall season now closed, comprising the months September, October, and November, has been remarkably fine and warm, without notable storms, and giving abundant warmth to ripen our late (corn) crop, and for all fall work. Roads have been excellent throughout Iowa.

The winter now beginning will probably be a moderate or mild one for Iowa; the chances that it may prove severe are certainly less than one in fifty, according to all results obtained during the past forty-five years of observations. It should not be overlooked, however, that our Iowa winters normally contain sixteen days on which the temperature reaches down to zero, Fahrenheit.

Prof. H. A. Huston, of Lafayette, Indiana, furnishes the following meteorological summary for the state, with the accompanying remarks:

Districts.	Temperature.			Precipitation.
	Highest.	Lowest.	Monthly mean.	
Northern counties.....	70	0	38.6	1.6t
Central counties.....	72	7	39.5	1.6t
Southern counties.....	78	10	44.2	1.95
State.....	78	7	40.8	1.72

Atmospheric pressure.—Mean for the state 30.10 inches; highest 30.53 at Indianapolis, on the 6th; lowest 29.37 at Wabash, on the 23d; station reporting highest monthly mean, Vevay, 30.14; station reporting lowest monthly mean, Wabash, 30.02.

Temperature.—Mean for the state 40°.8 is 2°.5 below that for November, 1883. The maximum temperature, 78°, occurred at Marengo; minimum temperature, 7°, occurred at Lafayette.

Precipitation.—Average for the state 1.72 is 3.31 below that for November, 1883. The large monthly rainfall, 3.10, occurred at Marengo; the least monthly rainfall, 0.93, occurred at Corydon.

The following are extracts from the November bulletin of the Louisiana Weather Service, Mr. Robert S. Day, Director:

The temperature for the month has been comparatively cool, but the frosts, which were general outside the country contiguous to New Orleans, were not severe enough to do injury in the sugar region. The yield of cotton was checked by the cool weather of October 28th. The cold waves of the 6th, 9th, 20th, and 29th came from the northwest with the customary speed and severity, but "slowed up" and were materially modified in temperature after crossing into the swamp basin of lower Louisiana. Cold waves at New Orleans cannot be predicted with certainty for this reason, as they are sometimes delayed or dissipated in the swamp district or are deflected by the northeast winds. A cold wave from the north entered the northeast corner of the state on the 18th, but covered a small district. The rainfall continued below the average all over the state.

The predictions of the Signal Service proved correct, except in the country protected or influenced by the swamp basin.

State summary.

Mean temperature for November, 1884, 55.4°; highest temperature, Franklin, 1st, 82.5°; lowest temperature, Delta, 7th, 19.0°; greatest daily range, Delta, 10th, 50.0°; least daily range, Saint Joseph, 29th, 4.0°.

Average rainfall, 1.36 inches; greatest daily rainfall, 3.13 inches, Shreveport, 6th; greatest rainfall for month, 5.73 inches, Shreveport; average rainy days, 4.8; rainfall since December 1st, 1883, 55.47 inches.

River at New Orleans fell during the month one foot four inches; river at Shreveport rose during the month three feet ten inches.

Lunar halos: Red River Landing, 2d.

Storms: Thibodeaux, on 22d; Lafayette, 22d; New Iberia, 22d; Lake Providence, 22d.

Heavy frosts: Monroe, 20th, 21st, 24th; Lake Providence, 6th, 7th, 8th, 9th, 10th; Delta, 6th, 7th, 10th, 24th, 25th; Vidalia, 28th; Saint Joseph, 7th, 10th, 30th; Natchitoches, 7th, 8th, 9th, 21st; Alexandria, 7th, 8th, 9th, 29th; Chenyville, 7th, 8th, 9th, 29th; Red River Landing, 29th; Whiteville, 7th, 8th, 9th, 29th; Opelousas, 7th, 8th, 9th, 29th; New Iberia, 7th, 8th, 9th, 21st, 29th; Franklin, 7th, 8th, 9th, 10th; Lafayette, 7th, 8th, 9th, 29th; Thibodeaux, 7th, 8th, 9th, 29th, 30th; Donaldsonville, 28th, 29th; Houma, 7th, 8th, 9th,

29th; Baton Rouge, 28th, 30th; Canton, 7th, 8th, 9th, 10th, 11th, 21st, 29th; Shreveport, 7th, 20th, 24th.

Professor W. H. Payne, of Northfield, Minnesota, Director of the State Weather Service, reports the following:

The barometric pressure for November was higher than for October by a difference of .071 inch, and also .040 inch higher than for November, 1883.

The temperature of the air was $28^{\circ}.7$, or $20^{\circ}.6$ lower than for October, and $2^{\circ}.2$ colder than for November, 1883.

The precipitation (all in the form of snow) was below the normal, being only 0.60 inch, or 2.85 less than for October, and 0.40 less than for November, 1883; rain fell on only one day, viz: the 10th, and not in sufficient quantity to measure.

The following is the November bulletin of the Missouri Weather Service, Prof. Francis E. Nipher, Director:

The temperature and rainfall of November have both been near the normal values, the rainfall at the central station having been 2.19 (normal 2.95) and the temperature having been $45^{\circ}.0$ (normal $42^{\circ}.8$). In former years the November temperature has ranged from $32^{\circ}.2$ (1880) to $56^{\circ}.5$ (1848).

The extremes of temperature were $15^{\circ}.6$ on the 24th and 76° on the 16th. In the former years the lowest minimum ever observed was $-0^{\circ}.5$ on November 28, 1845, and the highest maximum was $81^{\circ}.5$ on November 11th, 1837. In Saint Louis the first killing frost occurred on the morning of the 5th, the minimum temperature having been $30^{\circ}.5$. The temperature fell to or below 32° nine times during the month.

In the state the lowest minimum, 3° , is reported from Phelps City, the highest minimum being 22.2 at Cairo, Illinois. The highest maximum was 85° , near Pro Tem, in southern Missouri, and the lowest maximum was 66° at Glasgow. The highest mean was $48^{\circ}.5$ at Cairo, and the lowest was $39^{\circ}.1$ at Phelps City.

The rainfall was a little less than one inch in the northwest part of the state, increasing quite regularly to 4.7 in the extreme southern part.

The snowfall was from two to three inches in the north part of the state, and diminished to none in the south.

The first snow of the season fell on the 17th and 18th, beginning late on the 17th in the northwest part of the state and extending over the entire state, excepting the two southern tiers of counties, on the 18th.

Oregon reports the corn crop good, but the yield per acre is less than was expected owing to the bad stand. The yield is about average.

The observer at Steelville reports the occurrence of cloud shadows projected through haze on the evening of the 10th at 7 to 8 o'clock p. m. It was best defined about 7.20, after twilight had entirely disappeared. "It consisted of alternate dark and bright bands passing entirely across the heavens, terminating low down in the east in total darkness, and in a bright halo two to three degrees above the western horizon. Sky perfectly clear." The apparent convergence of these bands is due to perspective, they being really parallel. The phenomenon covered the entire heavens and was unusually well marked. Its occurrence so late in the evening is somewhat unusual, and was due to an unusual height of cloud and hazy atmosphere.

The following is from the November bulletin of the Nebraska Weather Service, Prof. Goodwin D. Swezey, Director:

Never since our weather service has been established has November been so dry, reaching this year only one-ninth the normal amount of precipitation.

There have been no hail or thunderstorms, almost no snow, and less than usual of fogs.

The weather has been rather warm, yet with more than usual of cold nights and frosty mornings, and more than the normal number of decidedly clear and of decidedly cloudy days.

Rainfall.—The average rainfall for different sections of the state for November, 1884, is as follows: northeast section, 0.22 inch; southeast section, 0.21 inch; southwest section, 0.08 inch; northwest section, 0.06 inch.

The following summary is from the November bulletin of the Ohio Weather Service, Prof. T. C. Mendenhall, Director:

Mean barometer, 30.118 inches; highest barometer, 30.538 inches on the 6th at Cincinnati; lowest barometer, 29.349 inches on the 23d at Wauseon; range of barometer, 1.189 inches.

Mean relative humidity, 78.7 per cent. Mean temperature, $39^{\circ}.4$; highest temperature, $78^{\circ}.0$, on the 1st at Ironton; lowest temperature, $4^{\circ}.7$, on the 24th at Wauseon; range of temperature, $73^{\circ}.3$; mean range of temperature, $20^{\circ}.0$; greatest daily range of temperature, $48^{\circ}.0$, on the 10th at Ironton; least daily range of temperature, $1^{\circ}.5$, on the 29th at Hiram.

Average number of clear days, 10.1; fair days, 8.7; cloudy days, 11.3; days on which rain fell, 8.7; greatest number of days on which rain fell, 14., at Columbus; least number of days on which rain fell, 4, at Ironton.

Mean rainfall, 1.39 inches; average daily rainfall, .046 inch; greatest rainfall, 2.78 inches at New Bremen; least rainfall, .68 inch at Washington C. H.

Prevailing direction of wind, southwest.

The following is the November bulletin of the Tennessee Weather Service, Hon. A. J. McWhirter, Director:

The month of November was devoid of any special meteorological features, with the exception of the high winds, which prevailed throughout the state on the 22d and 23d, a slight shock of earthquake in the extreme western portion of the state on the 29th, and the very small amount of rainfall.

The mean temperature for the month was $45^{\circ}.1$, $4^{\circ}.32$ below the November mean of last year, and $18^{\circ}.63$ below the mean for October. The mean of maximum temperatures was 71° , $2^{\circ}.7$ below, and the mean of minimum temperatures was $23^{\circ}.3$, $6^{\circ}.7$ above the November means of last year. The highest temperature was 76° , 6° below the November maximum of last year, and the lowest was 17° , 7° above the November minimum of last year. The range of temperature was 56° , 6° less than that for November, 1883. The highest temperature was general about the 1st and 3d, and the lowest about the 24th.

The mean depth of rainfall was 1.56 inches, 2.66 inches less than the mean for November of last year, which was perhaps slightly above the normal. The rainfall was very evenly distributed throughout the state, only four stations showing a less amount than one inch, and only four showing a greater amount than two inches. It was perhaps the most evenly distributed precipitation in the meteorological history of the state. The days of the greatest rainfall were the 4th, 18th, 22d, 23d and 28th. The rain of the 22d was confined almost exclusively to the western division—the others were general. The greatest local daily rainfall was 2.50 inches, on the 27th, at Quarter. There were sixteen rainless days during the month.

The month was free from electrical disturbances, no thunder being reported, and distant lightning only once, on the evening of the 22d, at Somerville.

The frequency of frosts was quite a feature during the month, only a few days being exempt. From the 1st to the 17th was almost an unbroken succession, some of them being reported very heavy.

State summary.

Mean temperature, $45^{\circ}.1$; highest temperature, 76° , on the 2d and 3d, at Howell, and on the 10th at Riddleton; lowest temperature, 17° , on the 8th, at Sunbright; range of temperature, 56° ; mean monthly range of temperature, $47^{\circ}.76$; greatest monthly range of temperature, 55° , at Riddleton; least monthly range of temperature, 40° , at Greeneville; mean daily range of temperature, $21^{\circ}.34$; greatest daily range of temperature, 45° , on the 10th, at Riddleton; least daily range of temperature, 1° , on the 19th, at Howell, and on the 28th at Grief; mean of maximum temperatures, 71° ; mean of minimum temperatures, $23^{\circ}.3$.

Mean depth of rainfall, 1.56 inches; mean daily rainfall, .050 inch; greatest rainfall, 4.10 inches, at Quarter; least rainfall, .30 inch, at Greeneville and Sunbright; greatest local daily rainfall, 2.50 inches, on the 27th, at Quarter.

Days of greatest rainfall, 18th, 23d, 28th, and 29th; average number of days on which rain fell, 5; average number of clear days, 16; average number of fair days, 7; average number of cloudy days, 7.

Prevailing direction of wind, north.